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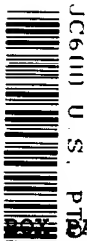835 Hanover Street, Suite 303
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BOX PATENT APPLICATION

Date: <u>December 2, 1998</u>

Honorable Commissioner of Patents and Trademarks
Washington, D.C. 20231

Attorney Docket No.: DAVOX-159XX

Sir:

Transmitted herewith for filing is the **patent application** of:
Inventor: Gene W. Lee
Entitled: SYSTEM AND METHOD FOR MANAGING A HOLD QUEUE BASED ON CUSTOMER INFORMATION RETRIEVED FROM A CUSTOMER DATABASE

Enclosed are:
[x] Declaration and Power of Attorney (original signature)
[x] An Assignment of the invention to: Davox Corporation with Check No. 5738 for $40
[ ] A Certified copy of a _____ application
[x] A Verified statement re small entity status (§1.9 and §1.27)- Small Business Concern
[ ] Citation of Art including ℰ references
[x] 3 sheets of informal drawings (one set)
[ ] Other:
[ ] Continuation-in-part application of application Serial No._____,
    filed _____
[ ] _____ is hereby appointed Associate Attorney by:
    Registration No.:

Attorney of Record: Daniel J. Bourque
Registration No.: 35,457

CLAIMS FILED:	MINUS BASE:	EXTRA CLAIMS:	RATE:	BASIC FEE:
				$790.00
Independent 3	- 3	=	x $82.00 =	0
Total 19	- 20	=	x $22.00 =	0
[ ] Multiple Dependent Claims (1st presentation)			+ $270.00 =	0
			SUBTOTAL FILING FEE	$790.00
Small Entity filing, divide by 1/2. (Note: verified statement must be attached per §1.9, §1.27, §1.28.)				$395.00
			TOTAL FILING FEE	$395.00

[X] The filing fee has been calculated above; check No. 5737 in the amount of $395.00 is
    enclosed.
[ ] The filing fee will be submitted at a later date.
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SUBMIT IN TRIPLICATE

Attorney of Record: Daniel J. Bourque, Esquire
Registration No.: 35,457

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application	:	Gene W. Lee
Filed	:	Herewith
For	:	SYSTEM AND METHOD FOR MANAGING A HOLD QUEUE BASED ON CUSTOMER INFORMATION RETRIEVED FROM A CUSTOMER DATABASE
Attorney's Docket	:	DAVOX-159XX

Express Mail Mailing Number - EM593 269 697US
Date of Deposit - December 2, 1998

I hereby certify that the following items are being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and as addressed to BOX PATENT APPLICATION, Commissioner of Patents and Trademarks, Washington, D.C. 20231:

U.S. Patent application of Gene W. Lee, entitled SYSTEM AND METHOD FOR MANAGING A HOLD QUEUE BASED ON CUSTOMER INFORMATION RETRIEVED FROM A CUSTOMER DATABASE, consisting of

Specification includes:

PP 1 through 14 of Detailed Description;
PP 15 through 21 of claims 1 through 19; and
PP 1 of Abstract

Drawings as follows (one copy informal): First sheet of Fig. 1; Second sheet of Fig. 2; and Third sheet of Fig. 3.

A Declaration and Power of Attorney, together with a check in the amount of $395 to cover the filing fee thereof and a cover letter in triplicate; a Verified Statement claiming small entity status; and an Assignment of the invention and application for recording of Gene W. Lee to Davox Corporation comprising 2 pages with a cover letter in triplicate; and an additional $40.00 check to cover the Assignment recording fee.

The above items are deposited with signatures and dated by the filing attorney as appropriate.

Catherine M. Barz

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: Gene W. Lee

ATTORNEY DOCKET NO.: DAVOX-159XX

SERIAL NO.:

EXAMINER:

FILED: Herewith

GROUP NO.:

PATENT NO.:

ISSUED:

ENTITLED: SYSTEM AND METHOD FOR MANAGING A HOLD QUEUE BASED ON CUSTOMER INFORMATION RETRIEVED FROM A CUSTOMER DATABASE

VERIFIED STATEMENT AS SMALL ENTITY

Honorable Commissioner of Patents and Trademarks
Box: Patent Application - Fee
Washington, D.C. 20231

Sir:

THE UNDERSIGNED DECLARE(S):

Exclusive rights in the above-identified invention reside in the "small entity(ies)" defined and named below, and "small entity" fees are appropriate. Qualification as a small entity is based upon the appropriately checked statements below:

[ ]   INDEPENDENT INVENTOR(S)

The below-signing independent inventor(s) has (have) not assigned, granted, conveyed or licensed, and is (are) under no obligation under contract or law to assign, grant, convey or license any rights in the invention to any person who could not likewise be classified as an independent inventor under 37 CFR 1.9(c) if that person had made the invention, or to any concern which would not qualify as a small business concern under 37 CFR 1.9(d) or a nonprofit organization under 37 CFR 1.9(e).

[x]   SMALL BUSINESS CONCERN

The below-identified small business concern qualifies as a small business as defined in 13 CFR 121.3-18, and reproduced in 37 CFR 1.9(d), for purposes of paying reduced fees under Section 41(a) and (b) of Title 35, in that the number of employees, including those of its affiliates, which does not exceed 500 persons, and it has not assigned, granted, conveyed or licensed, and is under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who could not be classified as an independent inventor if that person had made the invention, or to any concern which would not qualify as a small business concern under 37 CFR 1.9(d) or a nonprofit organization under 37 CFR 1.9(e).

Concerns are affiliates of each other when, either directly or indirectly, one concern controls or has the power to control the other, or a third party controls or has the power to control both. The number of employees of the business concern is the average over the fiscal year of the persons employed during each of the pay periods of the fiscal year. Employees are those persons employed on a full-time, part-time or temporary basis during the previous fiscal year of the concern.

[ ]   NONPROFIT ORGANIZATION (Check additional applicable box.)

The below-identified nonprofit organization qualifies as a small entity under 37 CFR 1.9(e) in that it constitutes:

1.   [ ]   a university or other institution of higher education located in any country; or

2.   [ ]   an organization of the type described in Section 501(c)(3) of the Internal Revenue Code of 1954 (26 USC 501(c)(3)) and exempt from taxation under Section 501(a) of the Internal Revenue Code (26 USC 501(a)); or

3.   [ ]   any nonprofit scientific or educational organization qualified under a nonprofit organization statute of a state of the United States (35 USC 201(i)); or

4.   [ ]   any nonprofit organization located in a foreign country which would qualify as a nonprofit organization under paragraphs (e)(2) or (3) of Rule 1.9 if it were located in the United States.

The undersigned acknowledge(s) the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate (37 CFR 1.28(b)).

The below-signing individual(s) hereby declare(s) that (he, she, they) are authorized to execute this statement on behalf of the small entity; that all statements made herein of (his, her, their) own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

Name of Small Entity: (Independent Inventor/Small Business/Nonprofit) Davox Corporation	
Address of Small Entity: (Street, City, State **or** Country, Zip Code) 6 Technology Park Drive Westford MA 01886	
Name of Person Signing: (Small Business/Nonprofit) John J. Connolly	
Title of Person Signing: (Small Business/Nonprofit) Vice President - Finance	
Signature: (Please sign and date in permanent ink.) X	Date signed: X 11/30/98.

SYSTEM AND METHOD FOR MANAGING A HOLD QUEUE BASED ON

CUSTOMER INFORMATION RETRIEVED FROM A CUSTOMER DATABASE

1   FIELD OF THE INVENTION

2   This invention relates to automated telephone systems and

3   more particularly to a system and method for managing telephone

4   calls that have been placed on hold and are held in a hold queue.

            BACKGROUND OF THE INVENTION

5   Automated telephone systems are in widespread use among users

6   such as telemarketing, credit collecting and reservation services.

7   Users of such system desire to optimize system performance by

8   attempting to ensure nearly 100% operator productivity while

9   minimizing the number of calls which are placed into a hold queue

10 while waiting for an available operator. This concern arises from

11 the fact that customers who are placed on hold will at some point

12 hang up and be lost.

13

14   Several prior art systems and methods have been developed to

15 prioritize the order in which calls placed on hold are answered.

16 However, all have been met with limited success. Early systems

17 and methods include prioritizing the on-hold calls based upon the

18 telephone number dialed. For example, long distance callers who

1

1 are on hold may be handled before on-hold local callers. Another

2 method involves prioritizing the on-hold calls strictly by age or

3 the length of time the call has been placed on hold. However,

4 this method fails to recognize the non-uniformity in the

5 willingness of customers to remain on hold based upon the length

6 of time the caller has been on hold. For example, a customer who

7 has been on hold for 30 or 40 seconds may not be more apt to hang

8 up then a customer who has been on hold for 10 seconds or less.

9 Another example is that customers are more apt to hang up when a

10 message is played during the hold interval. Additionally, such

11 non-uniformity in hold tolerance will vary and change from user to

12 user and from call campaign to call campaign.

13 In order to address the above-identified concerns, more

14 sophisticated hold queue management systems were developed. An

15 example of one such sophisticated system is disclosed in U.S.

16 Patent No. 5,278,898, which issued on Jan. 11, 1994 to the

17 assignee of the present application and which is incorporated

18 herein by reference. The '898 Patent discloses a system including

19 a method for managing calls on hold connected to an automated

20 telephone system by allowing the system to prioritize the calls on

21 hold according to selectable, dynamically controllable priority

22 criteria. This system places connected calls on hold and a call

23 record corresponding to each of the calls placed on hold is

24 inserted into a hold queue. Each of the call records includes at

25 least a first portion identifying the connected call and a second,

26 call prioritizing portion, which includes predetermined indicia

1   from which call prioritizing may be accomplished. A hold queue

2   prioritizer prioritizes the call records in the hold queue

3   utilizing the predetermined indicia and established a number of

4   call priority categories.

5   Like all of the prior art systems, even this sophisticated,

6   prior art hold queue management system suffers from a significant

7   drawback; namely, it relies solely upon information received from

8   the call itself for prioritization purposes. It fails to take

9   into account the fact that modern automated telephone systems may

10 have the capability of accessing a wealth of information regarding

11 customers that may be stored in a customer database. This

12 information may be vital to the proper prioritization of a

13 telephone call that is placed in a hold queue.

14 Accordingly, there is a need for a system and method of

15 prioritizing telephone calls in a hold queue that accesses a

16 customer database, retrieves information about the customer that

17 is relevant to the prioritization of a telephone call and

18 prioritizes the calls in the hold queue based, at least in part,

19 upon the information it retrieves from the customer database.

20   SUMMARY OF THE INVENTION

21 The present invention provides a system, including a method

22 for prioritizing on hold calls connected to an automated telephone

23 system by utilizing customer information retrieved from a customer

24 database. The method begins by connecting a plurality of calls to

25 the automated telephone system. Caller identifying information is

1   obtained from each connected call and each connected call is

2   placed on hold.   Then, a customer database is searched and a

3   customer database record is identified corresponding the obtained

4   caller identifying information for each connected call. Selected

5   information, which is relevant to the call prioritizing decision

6   is retrieved from the identified customer database record(s). A

7   call record for each connected call is then created and inserted

8   into a hold queue.   Each call record includes the caller

9   identifying information and call prioritizing information

10 corresponding to the connected call. The connected calls are then

11 directed to available agents based on the call prioritizing

12 information stored in each call record in the hold queue.

13   The system includes a call receiver/director for receiving a

14 plurality of calls connected to an automated telephone system and

15 for directing the plurality of connected calls to a plurality of

16 call center agents coupled to the call receiver/director,

17 responsive to the hold queue prioritizer described hereinafter.

18 The system also includes customer database, which includes a

19 plurality of customer database records, which include caller or

20 customer identifying information and a wealth of additional

21 information regarding the customer, including information relevant

22 to a call prioritizing decision.

23   A hold queue prioritizer is also included. The hold queue

24 prioritizer obtains the caller identifying information from each

25 connected call and searches the customer database to identify a

26 customer record or records that includes the caller identifying

4

1 information it obtained from each connected call. The hold queue

2 prioritizer then retrieves information from the identified call

3 record(s), which is relevant to the call prioritizing decision.

4 A call record is then generated by the hold queue

5 prioritizer, which includes the caller identifying information and

6 the call prioritizing information for each connected call.

7 Finally at least one hold queue is provided, which is coupled

8 to the hold queue prioritizer. The hold queue includes a

9 plurality of memory locations in which a corresponding plurality

10 of call records may be inserted.

DESCRIPTION OF THE DRAWINGS

12 These and other features and advantages of the present

13 invention will be better understood by reading the following

14 detailed description, taken together with the drawings wherein:

15 Fig. 1 is a block diagram of a system for prioritizing call

16 records in a hold queue based on customer information maintained

17 in a customer database, according to one embodiment of the present

18 invention;

19 Fig. 2 is a flow chart of a method for prioritizing call

20 records in a hold queue according the one embodiment of the

21 present invention; and

22 Fig. 3 is a more detailed flow chart of a method for

23 prioritizing call records in a hold queue showing alternative

24 methods of selecting a call to connect to an available agent.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

The system for prioritizing calls on hold in a hold queue according to the present invention is shown within dashed line 10 in Fig. 1. The on hold call prioritizing system 10 includes a call receiver/director 12, which is coupled to one or more telephone lines 14. Call receiver/director 12 is typically a private branch exchange (PBX) telephone switching system that can connect to and switch a number of telephone lines. In the preferred embodiment, the PBX or similar telephone line switch forms a part of an automated telephone calling/answer system. Such systems are well known to those skilled in the art and include systems such as the CAS 2000 and CRS 2000 systems, available from DAVOX Corporation of Westford, Massachusetts.

Call receiver/director 12 is also coupled to one or more call center agent terminals 16, which are capable of being connected to at least one telephone line 14. The call receiver/director 12 also monitors and keeps track of the availability of one or more agents at the call center agent terminals 16. The agent terminals are described in greater detail in U.S. Pat. No. 5,164,981, entitled Voice Response System with Automated Data Transfer, which issued to the assignee of the present invention on November 17, 1992 and which is incorporated herein by reference.

In the preferred embodiment, the agent terminals 16 are also capable of simultaneously connecting to a computer system 18, including a customer database 20, which includes a plurality of customer database files or records. The customer database records

include information regarding a plurality of callers or customers, including identifying information as well as information that may be useful in aiding the on hold call prioritizing system of the present invention in making a determination as to which calls on hold should be handled on a priority basis.

For example, a database record may identify a customer as the holder of a "gold" or "platinum" credit card, in which case a call related to that account would be flagged as a priority call. Other information that may be stored in a particular customer database record, such as a record of a recent purchase that may be an indicator that the particular customer is a likely candidate to purchase a specific article or service through a telemarketing firm. In any event, the customer database is an integral part of the present invention for it is the information contained therein that is utilized by the hold queue call prioritizing system in its prioritizing decision.

Upon the connection of one or more calls over telephone lines 14 to the call receiver/director 12, the call receiver/director obtains caller identifying information from the connected call. In one embodiment of the invention, the caller identifying information may include a telephone number from which an incoming call is placed. This can be obtained using well known automatic number identification (ANI) systems as well as other "call tracker" systems and methods. In another embodiment, the call receiver/director may obtain caller identifying information directly from the caller using an integrated voice response (IVR)

1 unit, such as the one described in greater detail in the above-

2 identified U.S. Pat. No. 5,164,981. Of course, other systems and

3 methods of obtaining caller identifying information from a caller

4 are contemplated by the invention.

5   When the call receiver/director obtains the caller

6 identifying information from a connected call, it places the

7 connected call on hold and forwards the connected caller

8 identifying information to a hold queue prioritizer 22. Upon

9 receipt of the caller identifying information corresponding to

10 each connected call that has been placed on hold, the hold queue

11 prioritizer searches the customer database 20 to identify any

12 customer records that include the same caller identifying

13 information it received from the call receiver/director 12. If

14 one or more customer records are identified, then the call queue

15 prioritizer will retrieve selected information from the identified

16 customer record(s) that is relevant to prioritizing the connected

17 call.

18   In credit collection scenarios, examples of call prioritizing

19 information include the type of account, the outstanding balance,

20 the age of the outstanding balance and other like information.

21 For telemarketing scenarios, examples of call prioritizing

22 information may include customer buying trends or specific

23 customer purchase transactions that would be related to the goal

24 of the current telemarketing campaign.

25   Once the hold queue prioritizer retrieves the relevant call

26 prioritizing information or data, it creates a call record 24 for

8

each connected call that is placed on hold. Each call record includes both the caller identifying information that the hold queue prioritizer received from the call receiver/director as well as the call prioritizing information that it retrieved from the customer database record(s). The call records 24 are then inserted into a hold queue 26, until the on hold connected calls are connected to an available agent 16.

The hold queue 26 typically includes a plurality of storage locations such as registers or memory locations in which the plurality of call records are stored. As indicated above, each call record 24 preferably includes a caller identifying portion 27, which identifies the connected call by a number, telephone line or other similar identification indicia. Each call record also includes a call prioritizing portion 28, which is related to the call prioritizing information that the hold queue prioritizer 22 retrieves from the customer database records.

In one embodiment, the call prioritizing portion 28 may include raw data retrieved from the customer database records, an example of which may include the letter "P" to indicate that the pertinent caller on hold is a platinum credit card holder. In other embodiments, the call prioritizing portion 28 may include a call prioritization index, which is derived by the hold queue prioritizer 22 based on one or more pieces of information that it retrieves from a customer database record. Examples of call prioritization indices include alphabetical call priority designations, such as "H", "N" and "L", representing high, normal

1 and low priority calls, respectively.

2 Alternatively, call prioritization indices may include call

3 numeric call priority scores. Such scores may absolute or

4 relative scores. With the former, multiple connected calls may be

5 assigned identical call priority scores, in which case a

6 subsequent decision process must be employed in order to determine

7 which of the calls having the same call priority score should be

8 connected to an available agent first. Examples of supplemental

9 decision strategies included first-in, first-out (FIFO) or last-

10 in, first-out (LIFO) strategies for identically scored connected

11 calls. Of course more sophisticated supplemental decision

12 strategies that take into account the precise nature of a specific

13 connected call and non-uniformities associated therewith, such as

14 those described in U.S. Pat. no. 5,278,898, are also contemplated

15 by the present invention.

16 With relative numeric call priority scores, a connected call

17 can be directed to available agent when it has the highest (or

18 lowest depending on the strategy employed) numeric call priority

19 score of all of the call records stored in the hold queue. Of

20 course such a relative numeric call priority score embodiment will

21 include the ability to dynamically adjust the relative call

22 priority scores assigned to the call records included in the hold

23 queue as additional call records are inserted into the queue.

24 The present invention also includes a method of prioritizing

25 connected calls in a hold queue, which is illustrated in the flow

26 charts of Figs. 2 and 3. The method 100 begins by connecting a

plurality of calls to an automated telephone system, step 110. As

each call is connected, the automated telephone system, and in

particular the system's call receiver/director, obtains caller

identifying information from each connected call, step 120. This

step contemplates a wide variety of "call tracker" means for

obtaining various types of caller identifying information, such as

the ANI and IVR systems mentioned above. The connected call is

then placed on hold, step 130.

Once a connected call is identified and the call is placed on

hold, the automated telephone system, and in particular, the hold

queue prioritizer, searches a plurality of customer database

records maintained in a customer database to identify customer

database records that correspond to the caller identifying

information received from a connected call, step 140. The

customer database is provided by the customer and is usually the

corporate customer information typically residing on a main frame

computer. One or more types of information obtained by the "call

tracker" system can be used to search the customer database to

find corresponding records.

In step 150, the hold queue prioritizer retrieves information

stored in the identified customer database records that may be

relevant to a call prioritization decision. As indicated above, a

wide variety of information may be relevant to a specific

connected call depending upon the precise nature of the call.

Therefore, the system allows a system supervisor to program the

system to look for different types of customer information in the

1 customer database records.

2 Once a connected call is identified and call prioritizing

3 information is retrieved from the corresponding customer database

4 records, the call queue prioritizer creates a call record for each

5 connected call, step 160. Each call record includes both the

6 caller identifying information and the call prioritizing

7 information or a derivative thereof, as such as the alphabetic or

8 numerical call priority indices or scores explained earlier.

9 Each call record is then inserted into a call hold queue,

10 step 170. The automated telephone system then directs the

11 connected calls to a plurality of available agents based on the

12 call prioritizing information included in each call record stored

13 in the hold queue, step 200.

14 Fig. 3 shows, in more detail, two alternative embodiments

15 contemplated by the invention for directing connected calls to

16 available agents, step 200 of Fig. 2. (Steps 110-160 in Fig. 3

17 are identical to the identically numbered steps explained above

18 with respect to Fig. 2.)

19 In a first embodiment of the invention, when a call center

20 agent completes a previous call, that call center agent becomes an

21 available agent. Once an agent becomes an available agent, the

22 automated telephone system will display a list of the call records

23 in the call hold queue, including the connected call identifying

24 information and the corresponding prioritizing information, on the

25 agent display, step 210. The available agent thereafter selects a

26 call to direct to the available agent based on the displayed call

1   prioritizing information, step 220.   In this embodiment, the

2   available agent may manually select a call to direct to that agent

3   irrespective of its relative position in the hold queue. In

4   addition, since certain agents may have expertise in handling

5   certain types of calls, different agents may select calls based on

6   both the connected call identifying information as well as the

7   call prioritizing information.   For example, a Spanish speaking

8   agent may select a call to handle that has a lower priority than

9   an incoming call from an English speaking customer.   Thus, this

10   embodiment would allow a great deal of real-time agent decision-

11   making in the call handling process.

12   In a second embodiment, the automated telephone system

13   compares the prioritizing information retrieved for each call

14   record with at least one predetermined prioritization attribute,

15   step 212.   Then, the system arranges the call records in the hold

16   queue in a prioritized order according to the prioritizing

17   information comparison, step 222.   Finally, in this embodiment,

18   the automated telephone system automatically directs the call that

19   is at the top of the call record arrangement to an available

20   agent, step 232.   Since this second embodiment envisions an

21   automated decision process, the decision criterion must be capable

22   of being updated from time to time by a system supervisor. In

23   addition, this automated decision making embodiment also allows

24   the call records in the hold queue to be re-arranged or re-ordered

25   as additional call records are inserted into the queue.

26   Accordingly, the disclosed system and method improves upon

13

1 the prior art by allowing calls on hold to be prioritized based on

2 customer information that is retrieved from customer database

3 records stored in a customer database, which information may be

4 more relevant to the prioritization decision than information that

5 is obtained directly from a connected call, such as, for example

6 from ANI or IVR systems.

7 Modifications and substitutions by one of ordinary skill in

8 the art are considered to be within the scope of the present

9 invention which is not to be limited except by the claims which

10 follow.

11 What is claimed is:

1   1.   A method of prioritizing calls connected to an

2 automated telephone system comprising the steps of:

3   connecting a plurality of calls to said automated

4 telephone system;

5   obtaining caller identifying information from each of

6 said connected calls;

7   placing each or said connected calls on hold;

8   searching a customer database and identifying a

9 customer database record corresponding to the caller identifying

10 information for each connected call;

11   retrieving information from said identified customer

12 database records that is relevant to call prioritization;

13   creating a call record for each connected call, each

14 call record including said caller identifying information and

15 said retrieved call prioritizing information;

16   inserting each created call record into a hold queue;

17 and

18   directing a connected call to an available agent based

19 on the retrieved call prioritizing information.

1   2.   The method as claimed in claim 1, wherein each said

2 connected call comprises an incoming telephone call placed by an

3 interested caller to said automated telephone system.

1   3.   The method as claimed in claim 1, wherein said step of

15

2   selecting a connected call to direct to an available agent

3   comprises displaying a list of call records stored in said hold

4   queue, including said caller identifying information and said

5   call prioritizing information for each said connected call on at

6   least one available agent display and manually selecting a

7   connected call to direct to said available agent.

1   4.   The method as claimed in claim 1, wherein said step of

2   selecting a connected call to direct to an available agent

3   comprises;

4   comparing the retrieved call prioritizing information

5   stored in each call record with at least one predetermined

6   prioritization attribute;

7   arranging the call records in the hold queue according

8   to the prioritizing information comparison; and

9   automatically directing a connected call that enjoys a

10   highest priority position in said hold queue arrangement to an

11   available agent.

1   5.   The method as claimed in claim 1, wherein said step of

2   obtaining caller identifying information comprises using an

3   automatic number identification (ANI) system to obtain a

4   telephone number from which the connected call is placed.

1   6.   The method as claimed in claim 1, wherein said step of

2   obtaining caller identifying information comprises using an

3   integrated voice response (IVR) system to obtain said caller

4   identifying information directly from a connected caller.

1   7.   A hold queue prioritizing system comprising:

2   an automated telephone system;

3   a call receiver/director for connecting a plurality of

4   calls to said automated telephone system;

5   a customer database including a plurality of database

6   records, each database record including caller identifying

7   information and information relevant to call prioritization;

8   a means for obtaining identifying information from each

9   of said plurality of calls connected to said automated telephone

10 system;

11   at least one hold queue coupled to said call

12 receiver/director, said at least one hold queue for holding call

13 records related to said plurality of connected calls;

14   a plurality of call center agent terminals coupled to

15 said automated telephone system for handling said connected

16 calls; and

17   a hold queue prioritizer for retrieving at least a

18 portion of said call prioritizing information stored in each said

19 database record corresponding to each connected call and for

20 selecting a connected call to direct to an available agent

21 responsive to said call prioritizing information.

1   8.   The hold queue prioritizing system as claimed in claim

17

2   7, wherein said hold queue prioritizer comprises a hold queue

3   call record display, displayed on at least on of said plurality

4   of agent terminals, said call record display including caller

5   identifying information and call prioritizing information for

6   each call record in said hold queue and a means for manually

7   directing a call to an available agent based on said displayed

8   connected call information.

1   9.   The hold queue prioritizing system as claimed in claim

2   8, wherein said displayed call prioritizing information comprises

3   raw customer information retrieved from each said customer

4   database record.

     10.   The hold queue prioritizing system as claimed in claim

8, wherein said displayed prioritizing information comprises a

call priority score derived by said hold queue prioritizer

responsive to said call prioritizing information retrieved from

each said customer database record.

1   11.   The hold queue prioritizing system as claimed in claim

2   10, wherein said displayed call priority score is an absolute

3   call priority score.

1   12.   The hold queue prioritizing system as claimed in claim

2   10, wherein said displayed call priority score is a relative call

3   priority score.

1   13.   The hold queue prioritizing system as claimed in claim

2   7, wherein said means for obtaining caller identifying

3   information comprises an automatic number identification (ANI)

4   system.

1   14.   The hold queue prioritizing system as claimed in claim

2   7, wherein said means for obtaining caller identifying

3   information comprises an integrated voice response (IVR) system.

1   15.   A system for prioritizing calls on hold and connected

2   to an automated telephone system comprising:

3   a call receiver/director for receiving a plurality of

4   calls connected to said automated telephone system and for

5   directing said plurality of connected calls to a plurality of

6   agent terminals coupled to said call receiver/director;

7   a customer database, including customer database

8   records including caller identifying information and call

9   prioritizing information;

10   a hold queue prioritizer, coupled to said call

11   receiver/director, said hold queue prioritizer including:

12   a means for obtaining caller identifying information

13   from each of said plurality of connected calls;

14   a means for searching said customer database to

15   identifying customer database records

16   corresponding to said obtained caller identifying

17   information for each of said plurality of

19

18   connected calls, and retrieving said call

19   prioritizing information from each of said

20   identified customer database records;

21   a means for creating a call record for each of said

22   plurality of connected calls, each call record

23   including said caller identifying information and

24   said call prioritizing information;

25   at least one hold queue, coupled to said call hold

26. queue prioritizer for storing said created call records; and

27   a means for selecting a connected call to direct to an

28   available agent based on said call prioritizing information.

16. The system for prioritizing calls on hold and connected

to an automated telephone system as claimed in claim 15, wherein

said means for selecting a call to direct to an available agent

comprises an on hold call record display for displaying said

plurality of call records stored in said hold queue, said

displayed call records including caller identifying information

and call prioritizing information and a means for allowing an

available agent to manually select a connected call to direct to

said available agent based on said displayed call prioritizing

information.

1   17. The system for prioritizing calls on hold and connected

2   to an automated telephone system as claimed in claim 15, wherein

3   said means for selecting a call to direct to an available agent

20

4   comprises a means for automatically directing a connected call to

5   an available agent based on the call prioritizing information

6   stored in said plurality of call records in said hold queue.

1   18.   The system for prioritizing calls on hold and connected

2   to an automated telephone system as claimed in claim 15, wherein

3   said call prioritizing information corresponding to each said

4   connected call comprises raw information retrieved from each said

5   customer database record.

1   19. The system for prioritizing calls on hold and connected

2   to an automated telephone system as claimed in claim 15, wherein

3   said call prioritizing information corresponding to each said

4   connected call comprises a call priority score derived by said

5   hold queue prioritizer responsive to said retrieved call

6   prioritizing information for each said connected call.

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ABSTRACT

1   A system, including a method for prioritizing on hold calls

2   connected to an automated telephone system is disclosed. The

3   system and method utilizes customer information retrieved from a

4   customer database as call prioritizing information for each

5   connected call. The method begins by connecting a plurality of

6   calls to the automated telephone system. Caller identifying

7   information is obtained from each connected call and each

8   connected call is placed on hold. Then, a customer database is

9   searched and a customer database record is identified

10   corresponding the obtained caller identifying information for each

11   connected call. A call record for each connected call is created

12   and inserted into the hold queue. Each call record includes the

13   caller identifying information and call prioritizing information

14   corresponding to the connected call. The connected calls are then

15   directed to available agents based on the call prioritizing

16   information stored in each call record in the hold queue.

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FIG. 1

100

```
        ┌─────────────────────────┐
        │   CONNECT A PLURALITY   │
        │    OF CALLS TO AN       │
  110 ──│  AUTOMATED TELEPHONE    │
        │        SYSTEM           │
        └─────────────────────────┘
                    │
                    ▼
      ┌───────────────────────────────────┐
      │ OBTAIN CALLER IDENTIFYING INFORMATION │
 120 ─│    FROM EACH CONNECTED CALL        │
      └───────────────────────────────────┘
                    │
                    ▼
        ┌─────────────────────────┐
        │  PLACE EACH CONNECTED   │
 130 ──│     CALL ON HOLD        │
        └─────────────────────────┘
                    │
                    ▼
    ┌───────────────────────────────────────┐
    │ SEARCH A CUSTOMER DATABASE AND IDENTIFY │
    │ A CUSTOMER DATABASE RECORD CORRESPONDING │
 140│ TO THE CALLER IDENTIFYING INFORMATION  │
    │      FOR EACH CONNECTED CALL           │
    └───────────────────────────────────────┘
                    │
                    ▼
    ┌───────────────────────────────────────┐
    │ RETREIVE INFORMATION RELEVANT TO CALL  │
    │  PRIORITIZING FROM EACH IDENTIFIED     │
 150│          CUSTOMER RECORD               │
    └───────────────────────────────────────┘
                    │
                    ▼
    ┌───────────────────────────────────────┐
    │ CREATE A CALL RECORD FOR EACH CONNECTED │
    │  CALL, EACH CALL RECORD INCLUDING THE  │
 160│ CALLER IDENTIFYING INFORMATION AND THE │
    │ RETRIEVED CALL PRIORITIZING INFORMATION │
    └───────────────────────────────────────┘
                    │
                    ▼
    ┌───────────────────────────────────────┐
    │  INSERT EACH CALL RECORD INTO A        │
 170│           HOLD QUEUE                   │
    └───────────────────────────────────────┘
                    │
                    ▼
    ┌───────────────────────────────────────┐
    │ DIRECT A CONNECTED CALL TO AN          │
    │ AVAILABLE AGENT BASED ON THE CALL      │
 200│ PRIORITIZING INFORMATION FOR EACH      │
    │ CALL RECORD IN THE HOLD QUEUE          │
    └───────────────────────────────────────┘
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FIG. 2

FIG. 3

110 — CONNECT A PLURALITY OF CALLS TO AN AUTOMATED TELEPHONE SYSTEM

120 — OBTAIN CALLER IDENTIFYING INFORMATION FROM EACH CONNECTED CALL

130 — PLACE EACH CONNECTED CALL ON HOLD

140 — SEARCH A CUSTOMER DATABASE AND IDENTIFY A CUSTOMER DATABASE RECORD CORRESPONDING TO THE CALLER IDENTIFYING INFORMATION FOR EACH CONNECTED CALL

150 — RETREIVE INFORMATION RELEVANT TO CALL PRIORITIZATION FROM EACH CUSTOMER RECORD CORRESPONDING TO EACH CONNECTED CALL AND ADD THE RETRIEVED INFORMATION TO THE CORRESPONDING CALL RECORD

160 — CREATE A CALL RECORD FOR EACH CONNECTED CALL, EACH CALL RECORD INCLUDING THE CALLER IDENTIFYING INFORMATION AND THE CALL PRIORITIZING INFORMATION

170 — INSERT EACH CALL RECORD INCLUDING CALLER IDENTIFYING INFORMATION AND PRIORITIZING INFORMATION INTO A HOLD QUEUE

200

210 — DISPLAY A LIST OF CALL RECORDS IN THE HOLD QUEUE INCLUDING THE CALLER IDENTIFYING INFORMATION AND PRIORITIZING INFORMATION ON AT LEAST ONE AGENT DISPLAY

220 — MANUALLY SELECT A CALL TO DIRECT TO AN AVAILABLE AGENT BASED ON THE DISPLAYED PRIORITIZING INFORMATION IRRESPECTIVE OF ITS RELATIVE POSITION IN THE HOLD QUEUE

212 — COMPARE THE PRIORITIZING INFORMATION FOR EACH CALL RECORD WITH AT LEAST ONE PREDETERMINED PRIORITIZATION ATTRIBUTE

222 — ARRANGE THE CALL RECORDS IN THE HOLD QUEUE ACCORDING TO THE PRIORITIZING INFORMATION COMPARISON

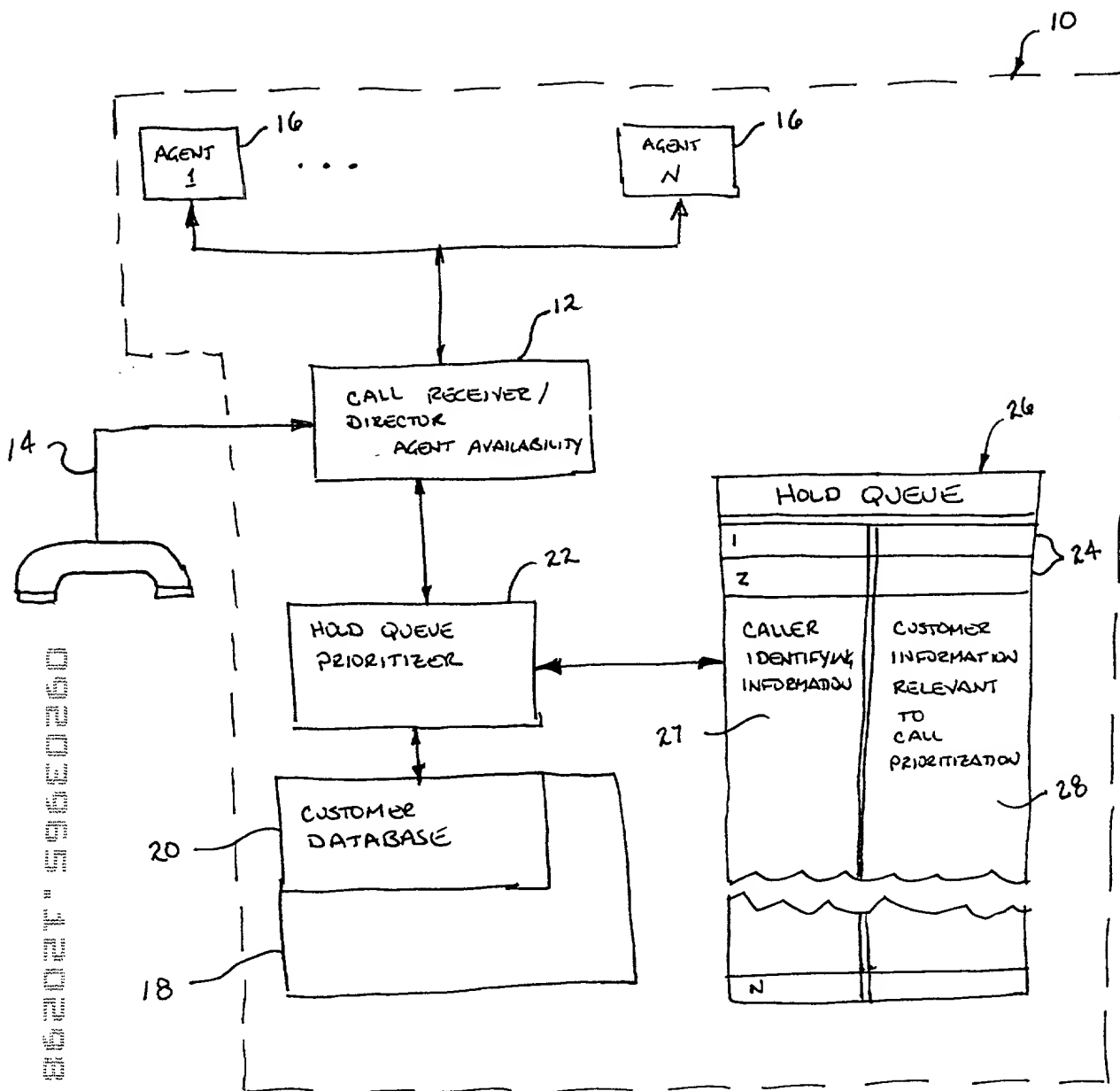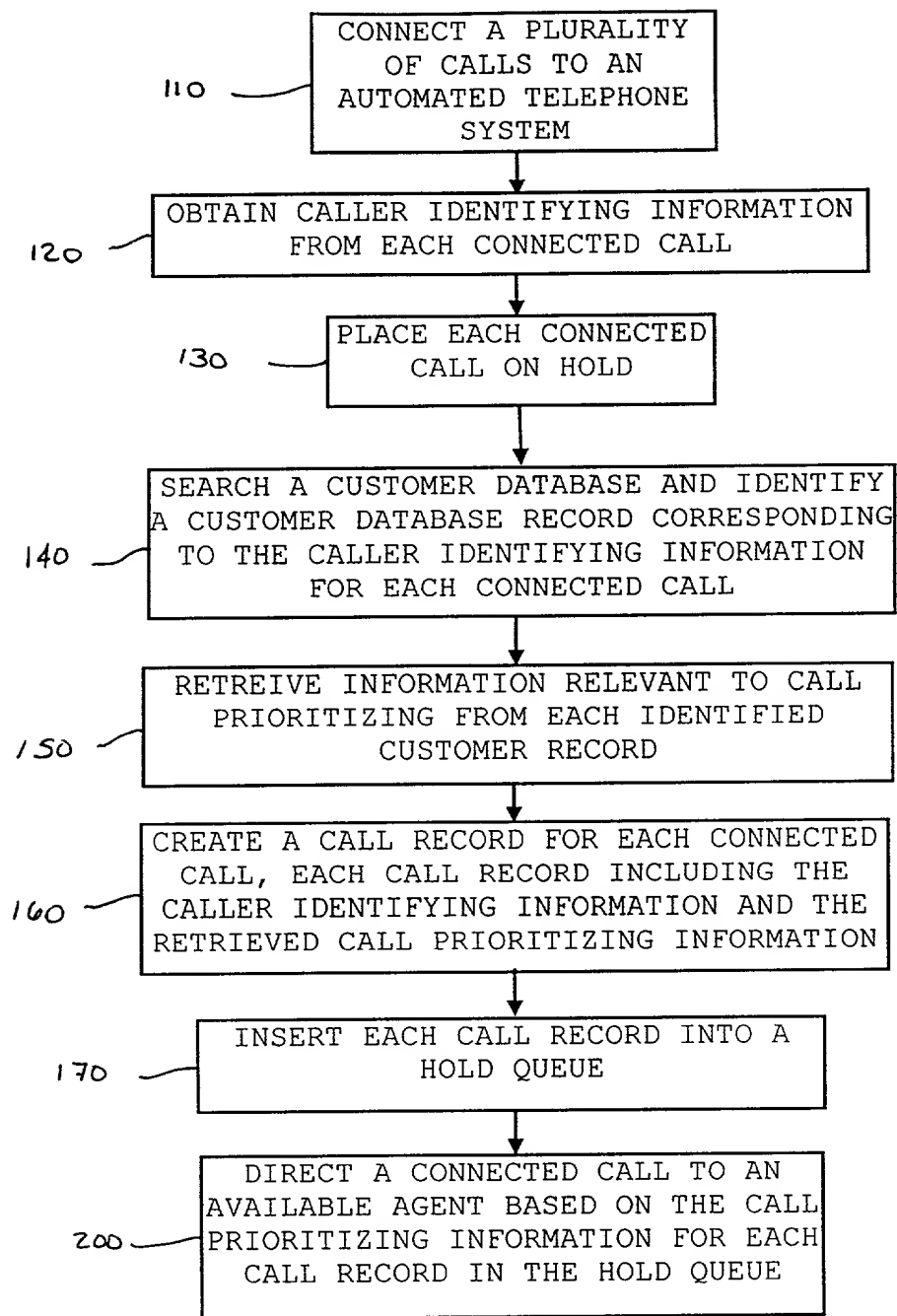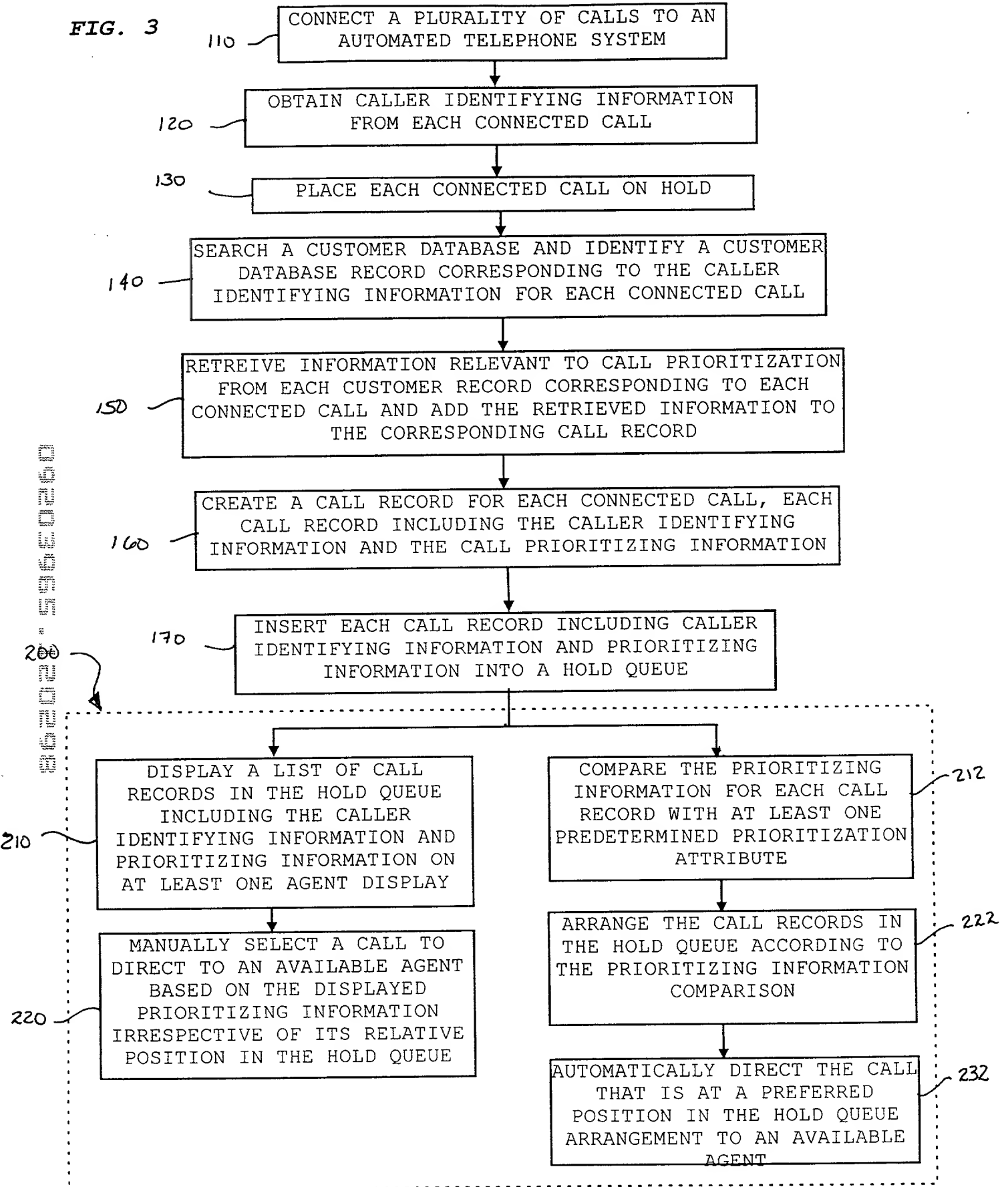232 — AUTOMATICALLY DIRECT THE CALL THAT IS AT A PREFERRED POSITION IN THE HOLD QUEUE ARRANGEMENT TO AN AVAILABLE AGENT

DECLARATION AND POWER OF ATTORNEY

As a below-named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name;

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:
SYSTEM AND METHOD FOR MANAGING A HOLD QUEUE BASED ON CUSTOMER INFORMATION RETRIEVED FROM A CUSTOMER DATABASE

the specification of which (check one):

[X]   is attached hereto.   [ ]   was filed _____ as Serial No. _____;
                                        amended   on   _____   (if
                                        applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations §1.56(a).

I hereby claim foreign priority benefits under Title 35 USC 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

<u>Prior Foreign Application(s)</u>   <u>Date Filed</u>   <u>Priority Claimed</u>
            [ ]   [ ]
(Number)   (Country)   (Day/Month/Year)   Yes No
                                            [ ] [ ]
(Number)   (Country)   (Day/Month/Year)   Yes No

I hereby claim the benefit under Title 35 USC 120 of any United States application(s) listed below and insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35 USC 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

(Application Serial No.)   (Filing Date)   (Patented/pending/abandoned)

(Application Serial No.)   (Filing Date)   (Patented/pending/abandoned)

I hereby claim the benefit under Title 35 USC 119(e) of any United States provisional application(s) listed below:

(Application Serial No.)   (Filing Date)   (Patented/pending/abandoned)

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) to prosecute this application and transact all business connected therewith in the Patent and Trademark Office, and to file with the USRO any International Application based thereon.

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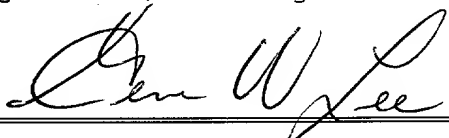**835 Hanover Street, Suite 303**
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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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